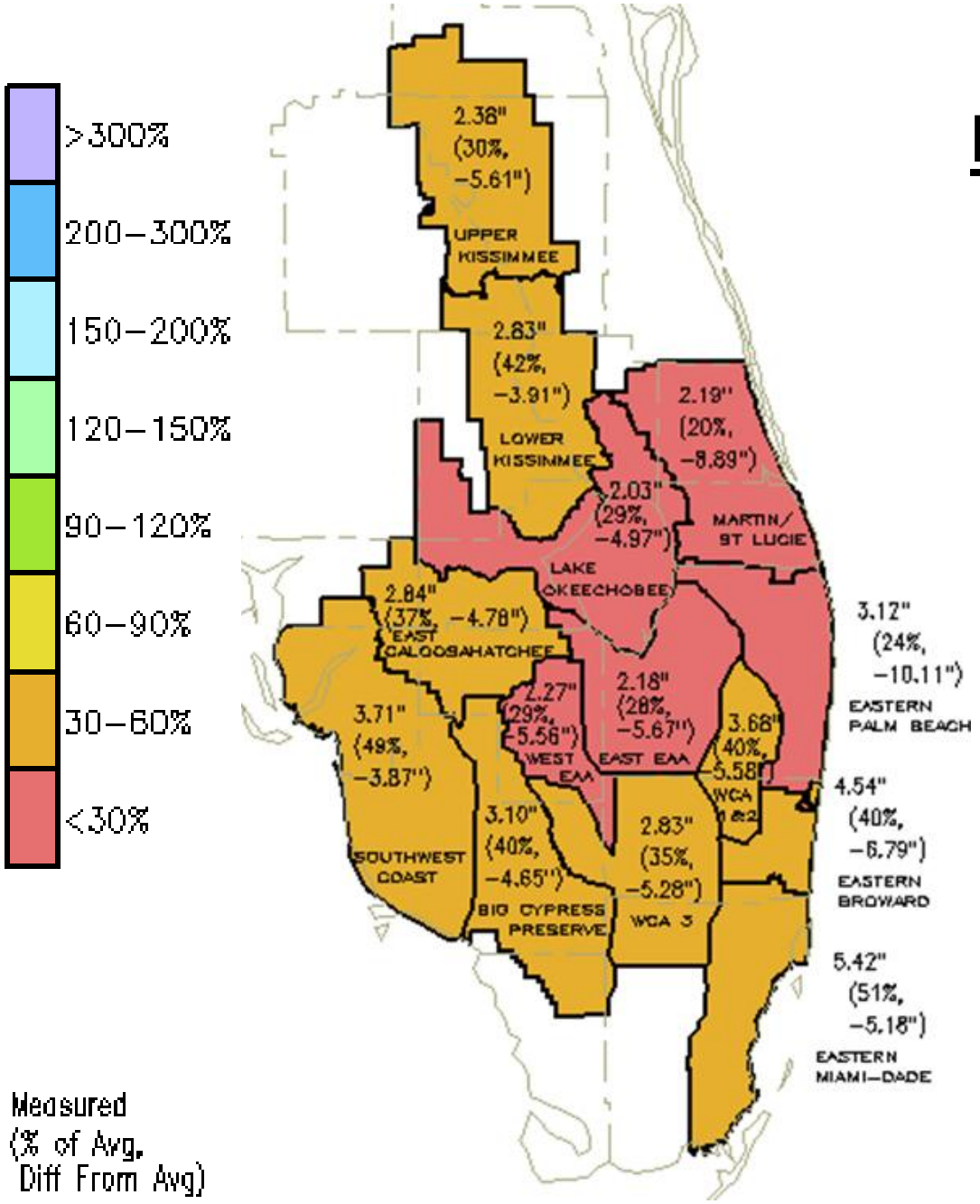
Water Conditions Summary

February 10, 2011

Susan Sylvester, Department Director
Operations Control & Hydro Data Management Department
South Florida Water Management District

SFWMD 2010
Dry Season Rainfall
Oct 02 – Jan 1

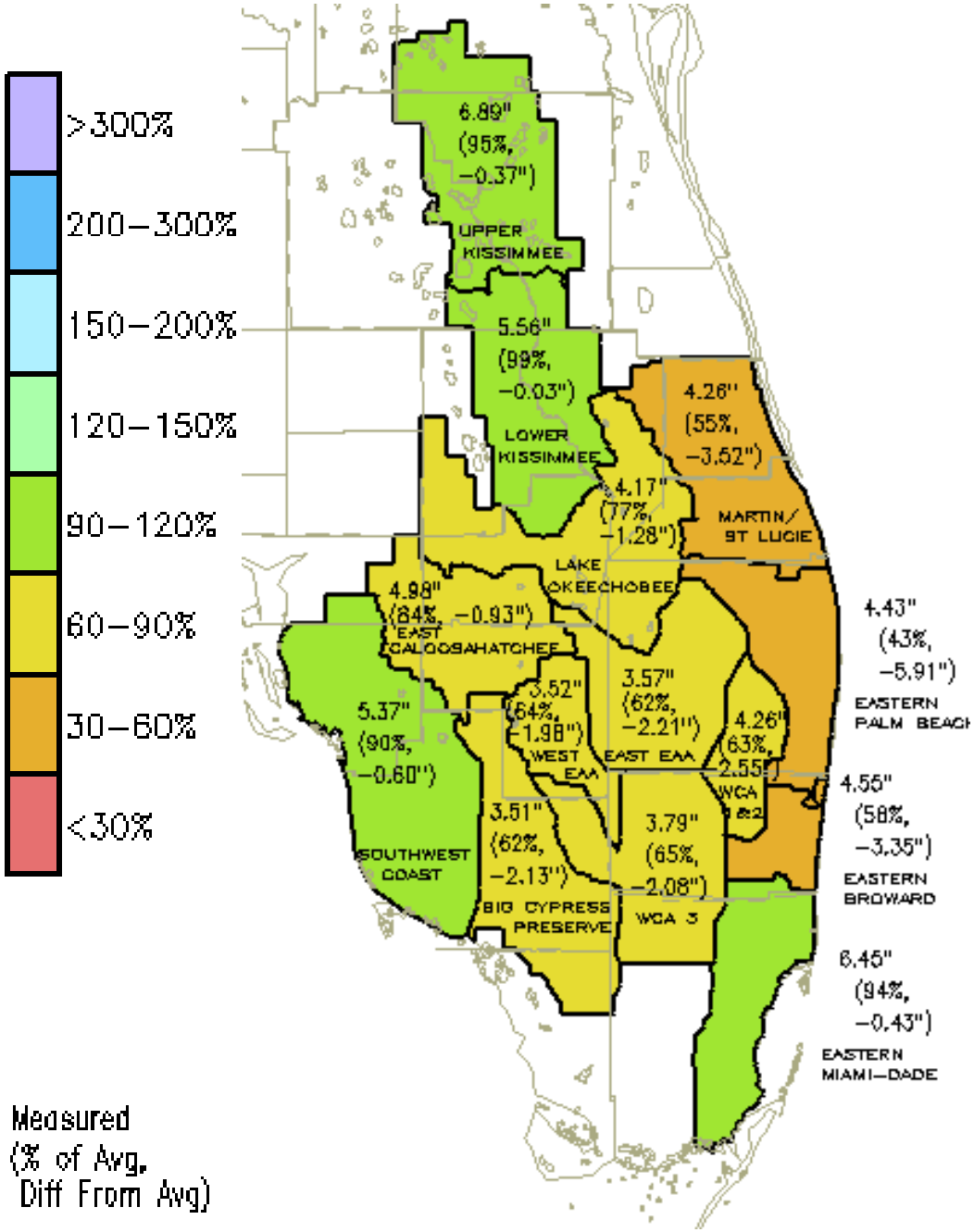
DISTRICT-WIDE: 2.97” (35% of Avg, or -5.46”)



- Lowest rainfall for Oct (12% of Avg., -2.98”) and Oct –Nov-Dec (3 months) since recordkeeping began in 1932
- Martin/St Lucie, Eastern Palm Beach and interior basins (Lake O., EAA) received less then 30% of average rainfall
- Upper and lower Kissimmee Basins received less than 50% of average rainfall

SFWMD 2010
Dry Season Rainfall
Oct 02 – Feb 4

DISTRICT-WIDE: 4.80” (75% of Avg, or -1.62”)



Jan 25th cold front provided much needed rainfall to the region with an average of 1.1 inches falling over the District.

The District averages only six of these one-inch rain days per year. We have varied between two and 10 of these events per year since 1993.

These one-inch rain days are critical to maintaining water supply.
On average, one-sixth of our annual rainfall occurs from these events.

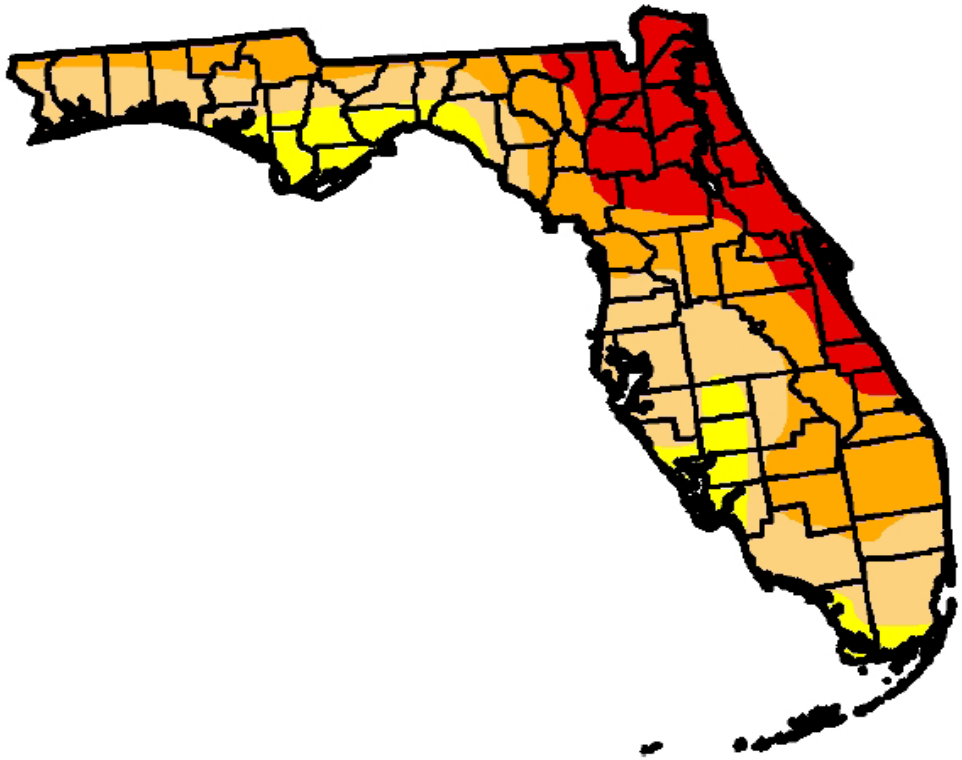
U.S. Drought Monitor

Florida

January 4, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.18	99.82	87.19	54.19	21.61	0.00
Last Week (12/28/2010 map)	0.18	99.82	86.04	50.84	20.21	0.00
3 Months Ago (10/05/2010 map)	55.09	44.92	25.36	5.98	0.00	0.00
Start of Calendar Year (12/28/2010 map)	---	---	---	---	---	---
Start of Water Year (09/28/2010 map)	54.97	45.03	18.02	4.22	0.00	0.00
One Year Ago (12/29/2009 map)	96.88	3.12	0.00	0.00	0.00	0.00



Intensity:

- *D0 Abnormally Dry*
- *D1 Drought - Moderate*
- *D2 Drought - Severe*
- *D3 Drought - Extreme*
- *D4 Drought - Exceptional*

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

USDA | National Drought Mitigation Center | NOAA

Released Thursday, January 6, 2011
National Drought Mitigation Center

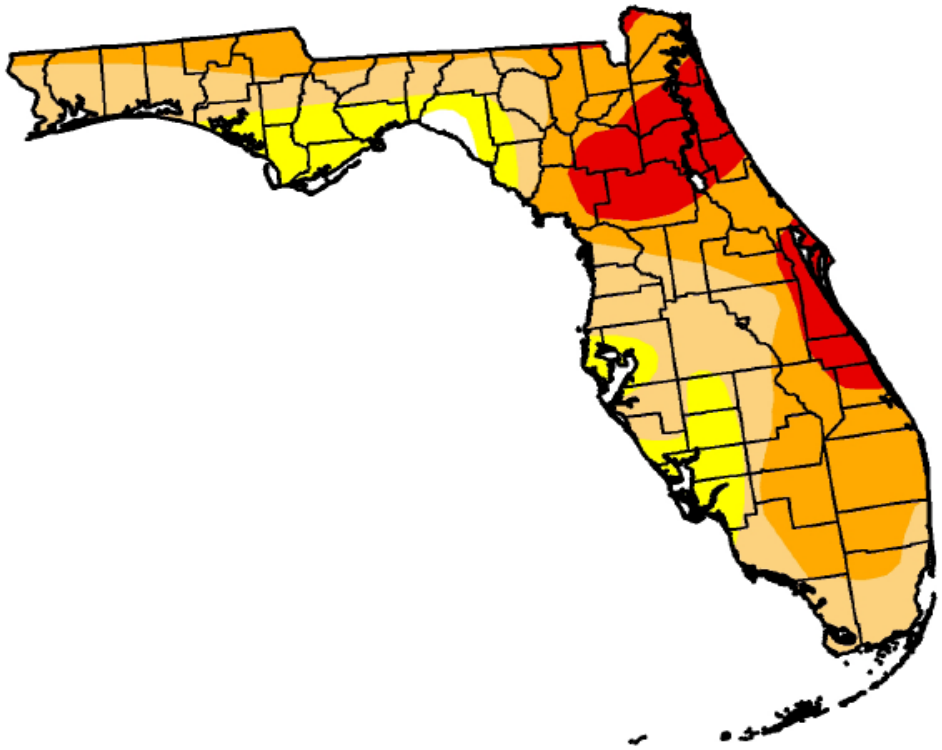
U.S. Drought Monitor

Florida

February 1, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.87	99.13	84.98	50.76	13.71	0.00
Last Week (01/25/2011 map)	0.17	99.83	87.73	54.25	20.96	0.00
3 Months Ago (11/02/2010 map)	11.60	88.40	50.87	29.62	4.30	0.00
Start of Calendar Year (12/28/2010 map)	0.18	99.82	86.04	50.84	20.21	0.00
Start of Water Year (09/28/2010 map)	54.97	45.03	18.02	4.22	0.00	0.00
One Year Ago (01/26/2010 map)	100.00	0.00	0.00	0.00	0.00	0.00



Intensity:

- *D0 Abnormally Dry*
- *D1 Drought - Moderate*
- *D2 Drought - Severe*
- *D3 Drought - Extreme*
- *D4 Drought - Exceptional*

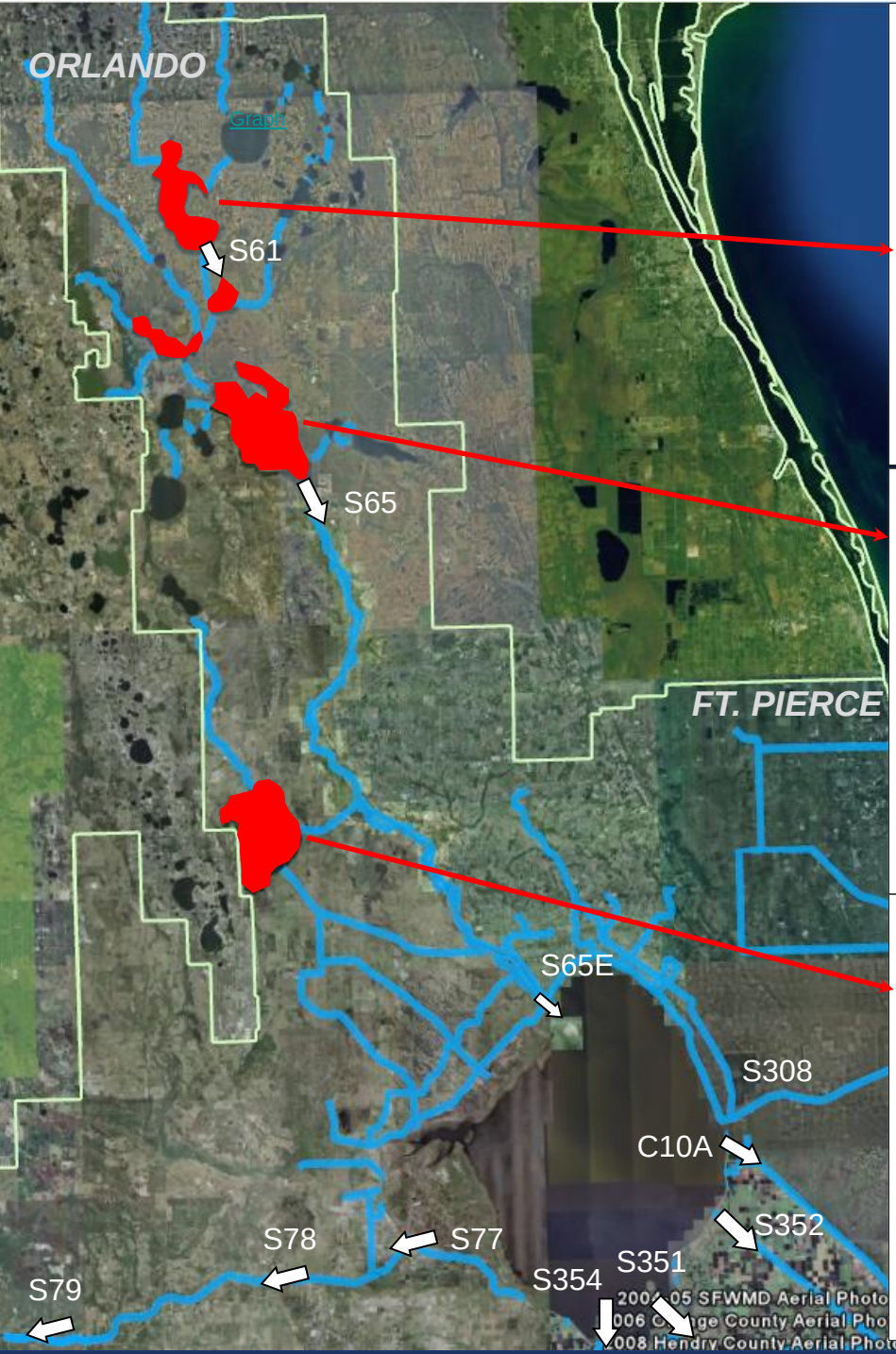
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

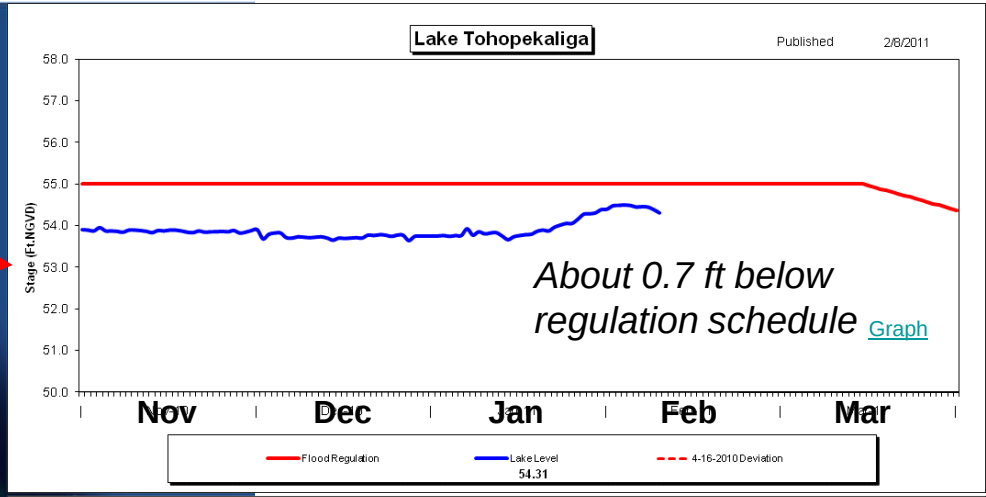
http://drought.unl.edu/dm

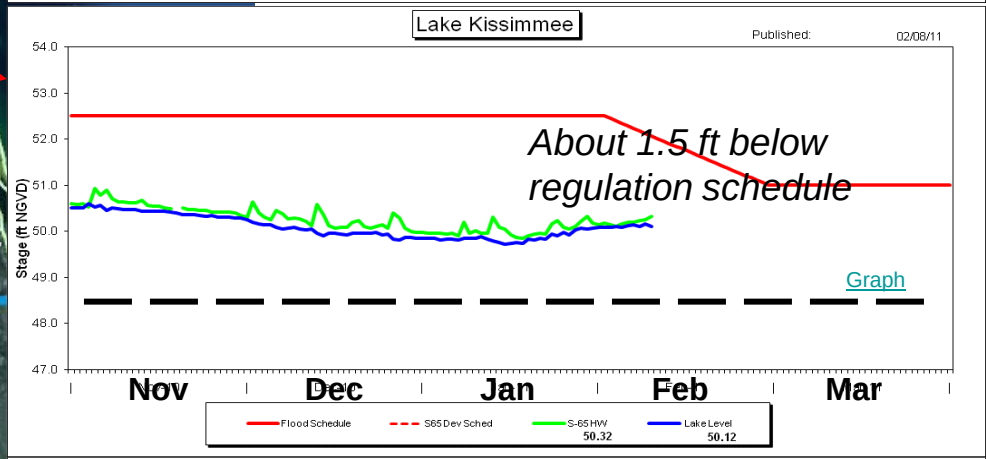
USDA | National Drought Mitigation Center | NOAA

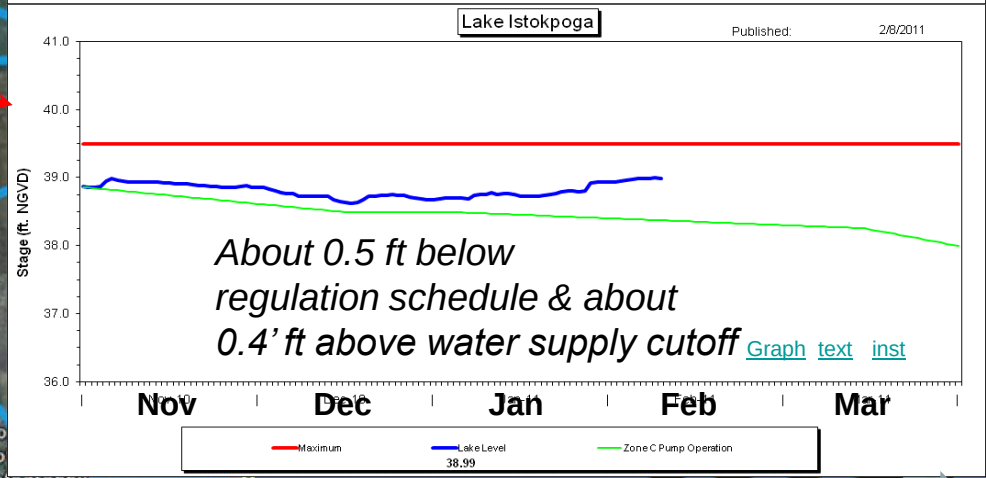
Released Thursday, February 3, 2011

R. Heim/L. Love-Brotak, NCDC/NOAA

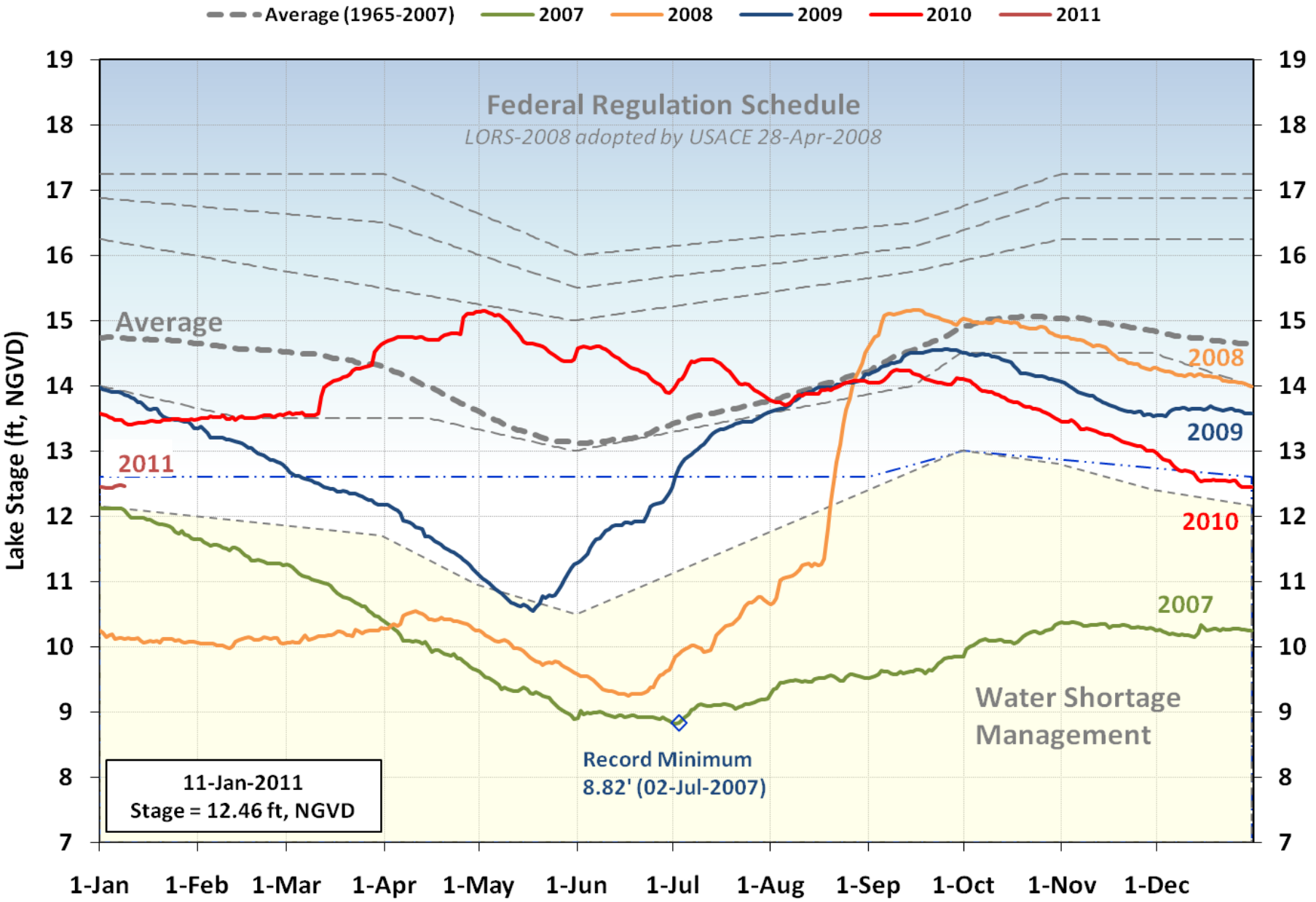

ORLANDO
Graph
S61
S65
FT. PIERCE
S65E
S308
C10A
S352
S78
S77
S351
S354
S79
2004-05 SFWMD Aerial Photo
2006 Orange County Aerial Pho
2008 Hendry County Aerial Photography


Lake Tohopekaliga
Published 2/8/2011
Stage (Ft.NGVD)
58.0
57.0
56.0
55.0
54.0
53.0
52.0
51.0
50.0
Nov
Dec
Jan
Feb
Mar
Flood Regulation
Lake Level
54.31
4-16-2010 Deviation
About 0.7 ft below regulation schedule
Graph

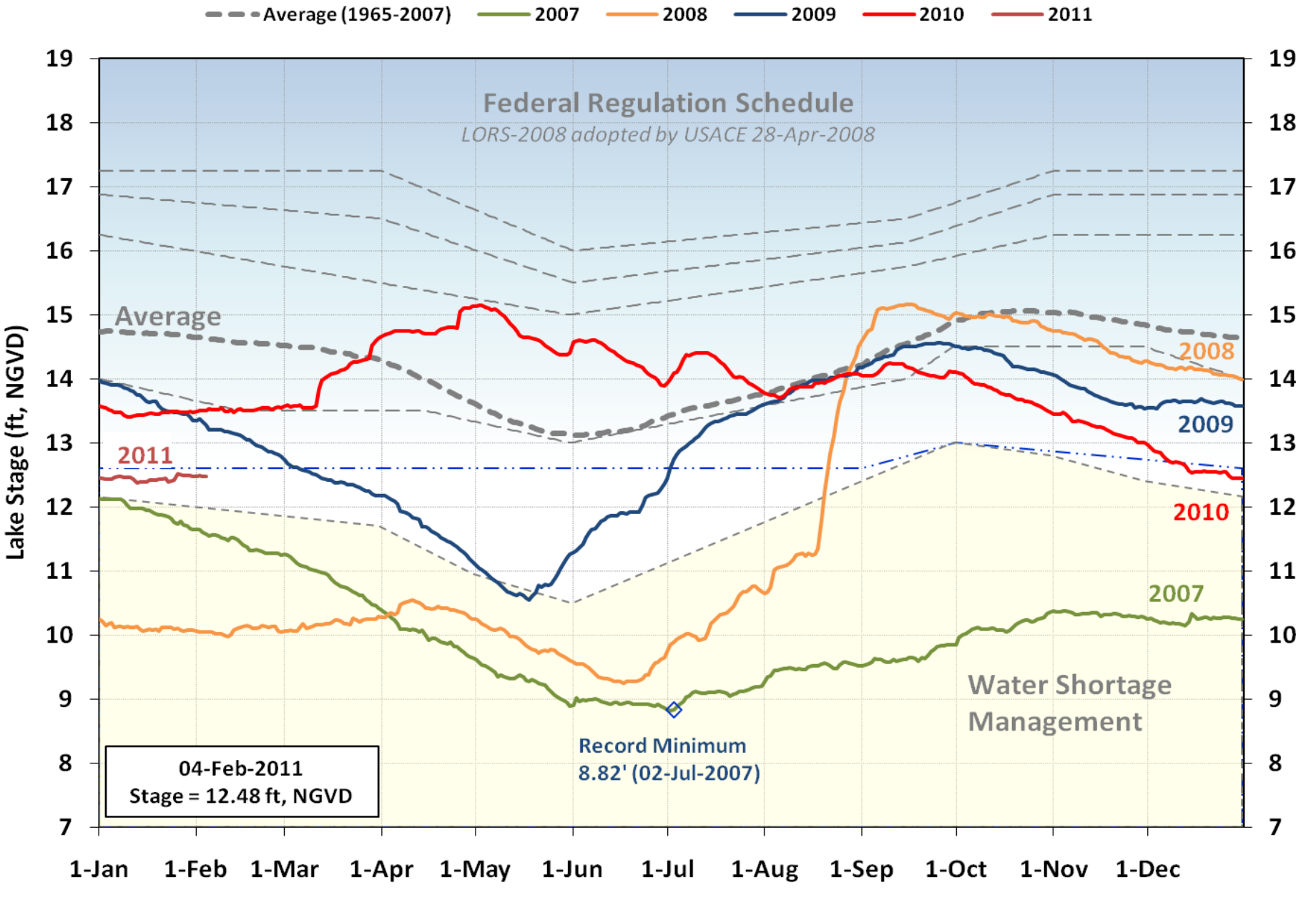

Lake Kissimmee
Published: 02/08/11
Stage (ft NGVD)
54.0
53.0
52.0
51.0
50.0
49.0
48.0
47.0
Nov
Dec
Jan
Feb
Mar
Flood Schedule
S65 Dev Sched
S-65 HW
50.32
Lake Level
50.12
About 1.5 ft below regulation schedule
Graph


Lake Istokpoga
Published: 2/8/2011
Stage (ft. NGVD)
41.0
40.0
39.0
38.0
37.0
36.0
Nov
Dec
Jan
Feb
Mar
Maximum
Lake Level
38.99
Zone C Pump Operation
About 0.5 ft below regulation schedule & about 0.4' ft above water supply cutoff
Graph
text
inst

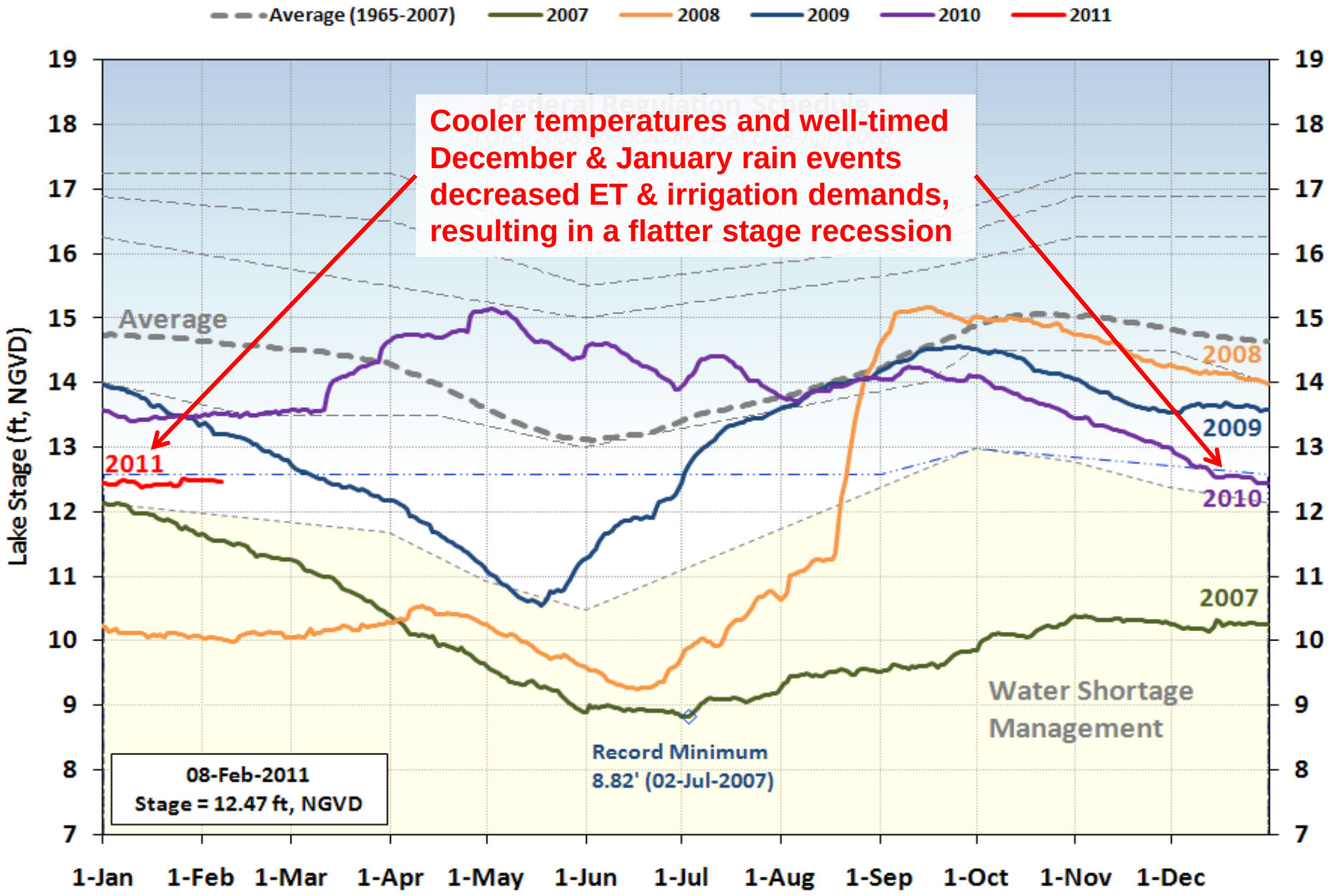
Lake Okeechobee Stage Hydrograph Comparison

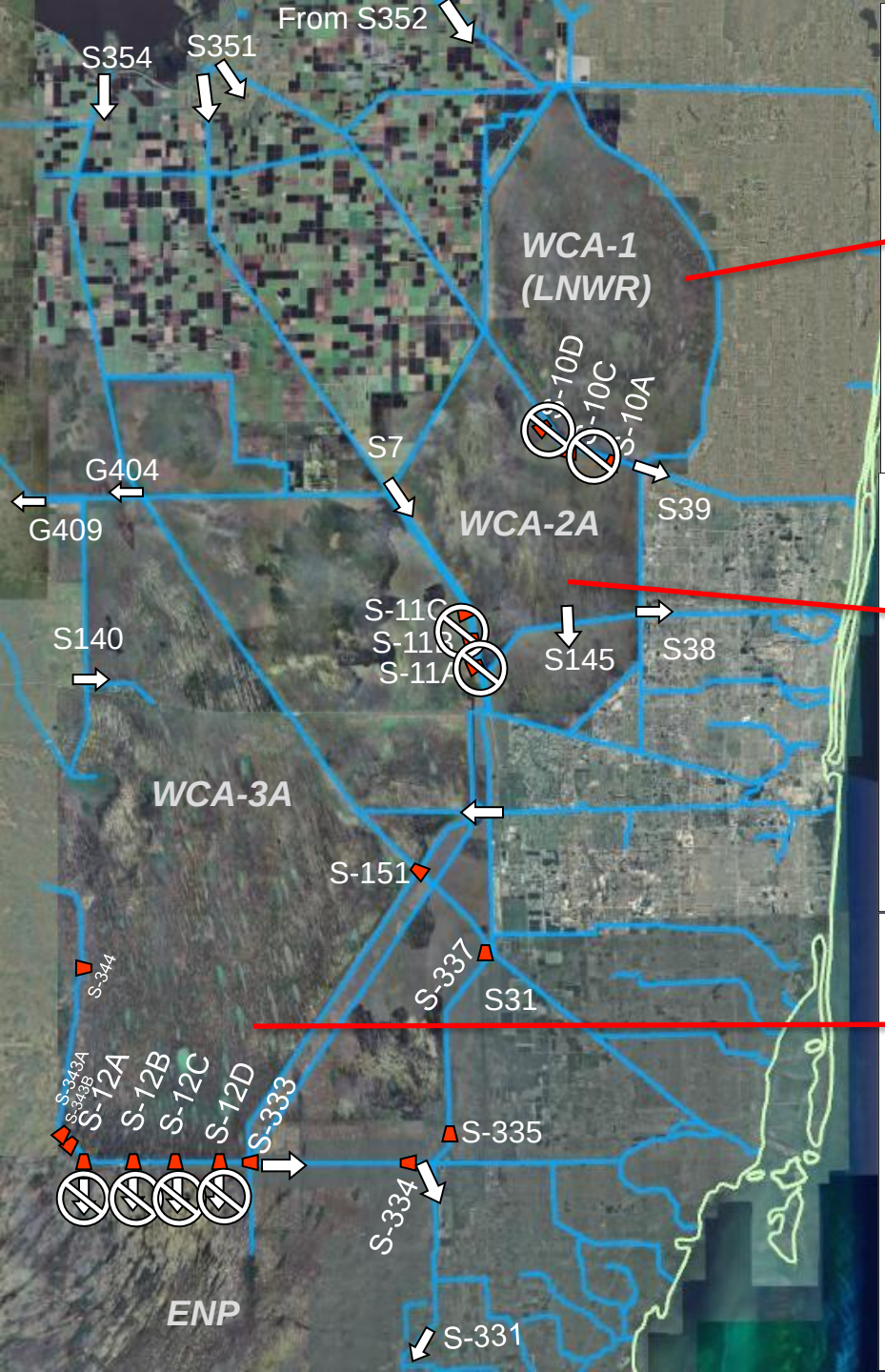


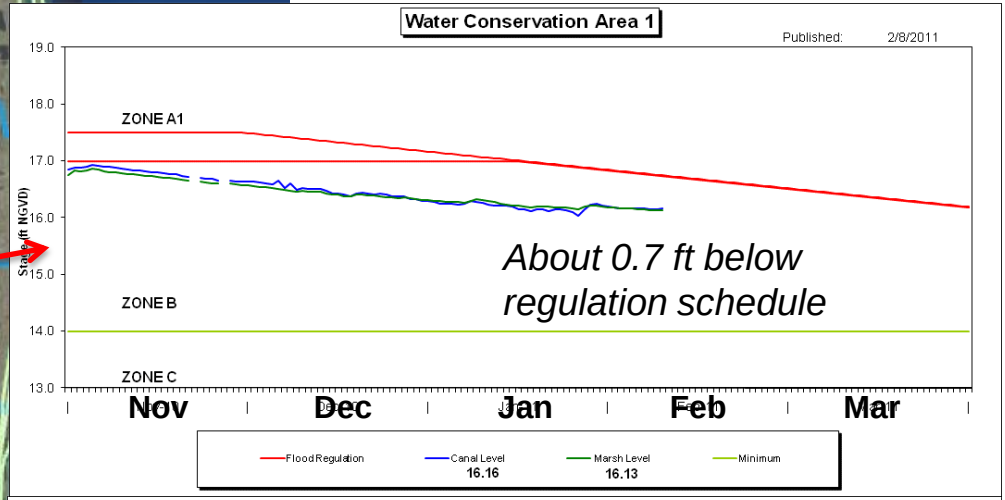
Lake Okeechobee Stage Hydrograph Comparison

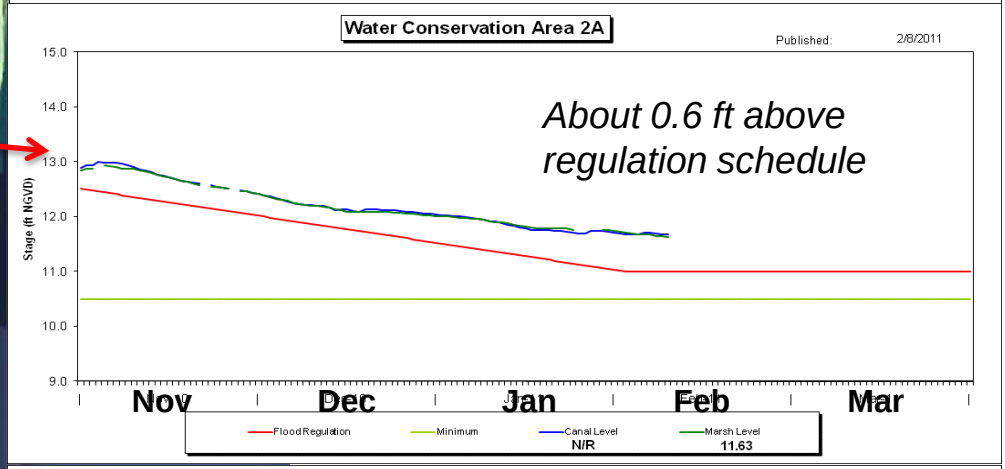


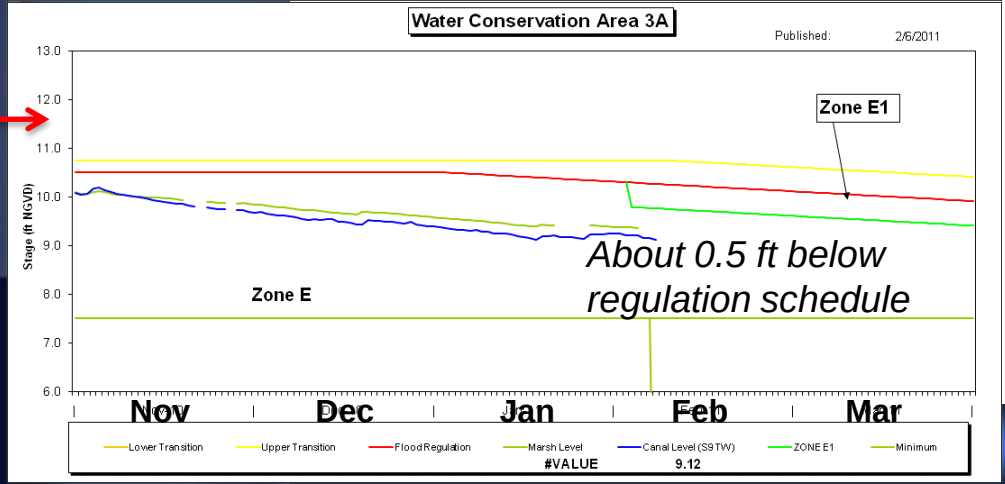
Lake Okeechobee Stage Hydrograph Comparison




From S352
S354
S351
WCA-1
(LNWR)
S-10D
S-10C
S-10A
S7
G404
G409
WCA-2A
S39
S-11C
S-11B
S-11A
S140
S145
S38
WCA-3A
S-151
S-344
S-337
S31
S-343A
S-343B
S-12A
S-12B
S-12C
S-12D
S-333
S-335
S-334
ENP
S-331


Water Conservation Area 1
Published: 2/8/2011
ZONE A1
ZONE B
ZONE C
Stage (ft NGVD)
19.0
18.0
17.0
16.0
15.0
14.0
13.0
Nov
Dec
Jan
Feb
Mar
About 0.7 ft below regulation schedule
Flood Regulation
Canal Level
16.16
Marsh Level
16.13
Minimum


Water Conservation Area 2A
Published: 2/8/2011
Stage (ft NGVD)
15.0
14.0
13.0
12.0
11.0
10.0
9.0
Nov
Dec
Jan
Feb
Mar
About 0.6 ft above regulation schedule
Flood Regulation
Minimum
Canal Level
N/R
Marsh Level
11.63

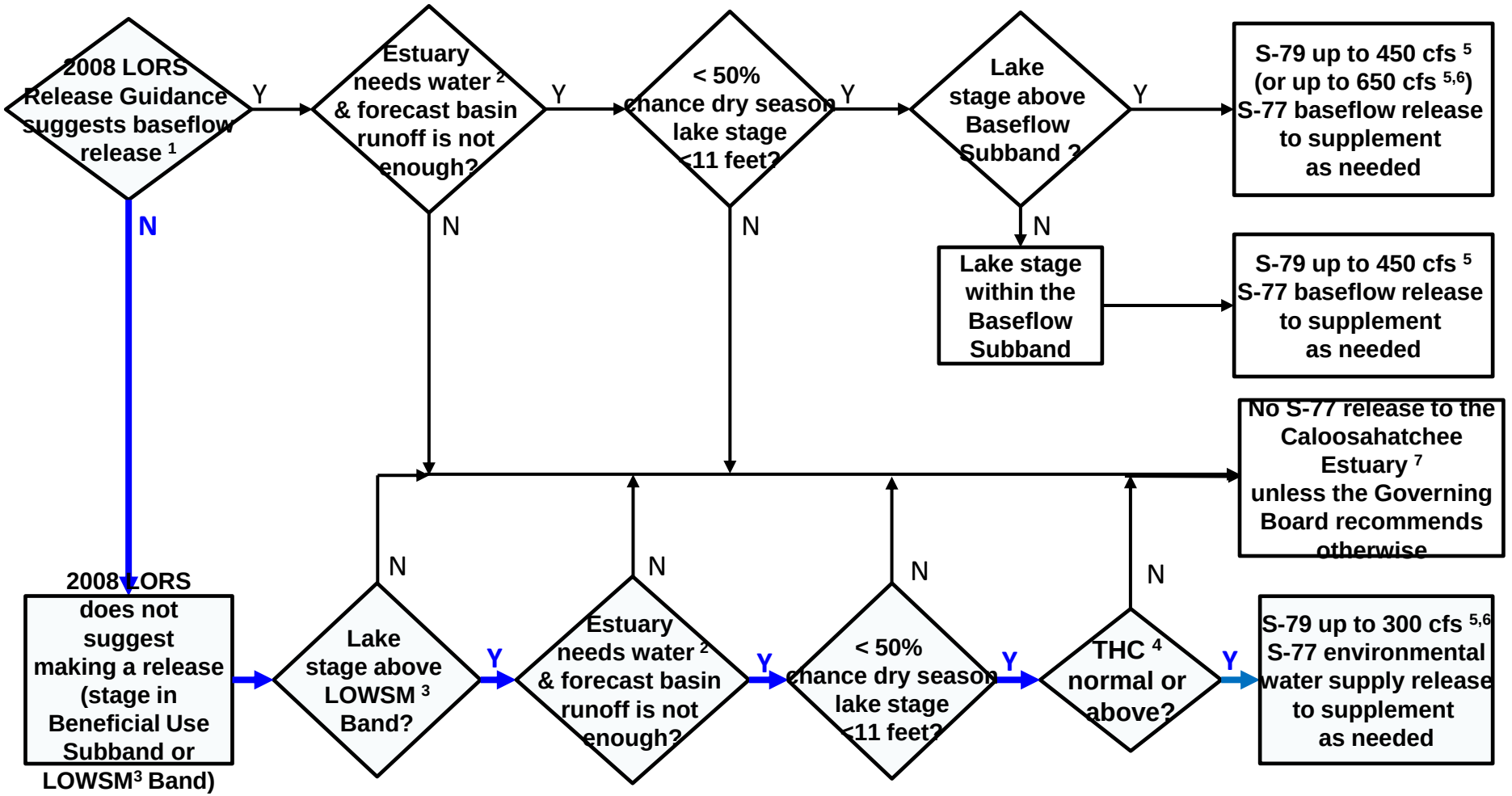

Water Conservation Area 3A
Published: 2/6/2011
Zone E1
Zone E
Stage (ft NGVD)
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
Nov
Dec
Jan
Feb
Mar
About 0.5 ft below regulation schedule
Lower Transition
Upper Transition
Flood Regulation
Marsh Level
#VALUE
Canal Level (S9TW)
9.12
ZONE E1
Minimum

Lake Okeechobee Operations

- **USACE's Lake O Regulation Schedule (2008 LORS)**
  - **Stage is in Beneficial Use Subband**
    - **about 0.5 ft above the Water Shortage Management Band**
  - **Federal Water Control Plan defers to SFWMD's Adaptive Protocol**

- **SFWMD's Lake O Adaptive Protocol (2010)**
  - **Release guidance suggests up to 300 cfs release to the Caloosahatchee Estuary via S-79, with S-77 environmental water supply release to supplement as needed**
  - **3rd consecutive 300 cfs environmental water supply release to begin Friday, February 11th.**

Flowchart to Guide Recommendations for Lake Okeechobee Releases to the Caloosahatchee Estuary for 2008 LORS Baseflow & for Environmental Water Supply



[1]The 2008 LORS Release Guidance (Part D) can suggest baseflow releases in the Intermediate, Low, or Baseflow Subbands.

[2]Estuary "needs" water when the 30-day moving average salinity at I-75 bridge is projected to exceed 5 practical salinity units (psu) within 2 weeks.

[3]LOWSM = Lake Okeechobee Water Shortage Management.

[4]Tributary Hydrologic Condition (THC) is based on classification of Lake Okeechobee Net Inflow and Palmer Index.

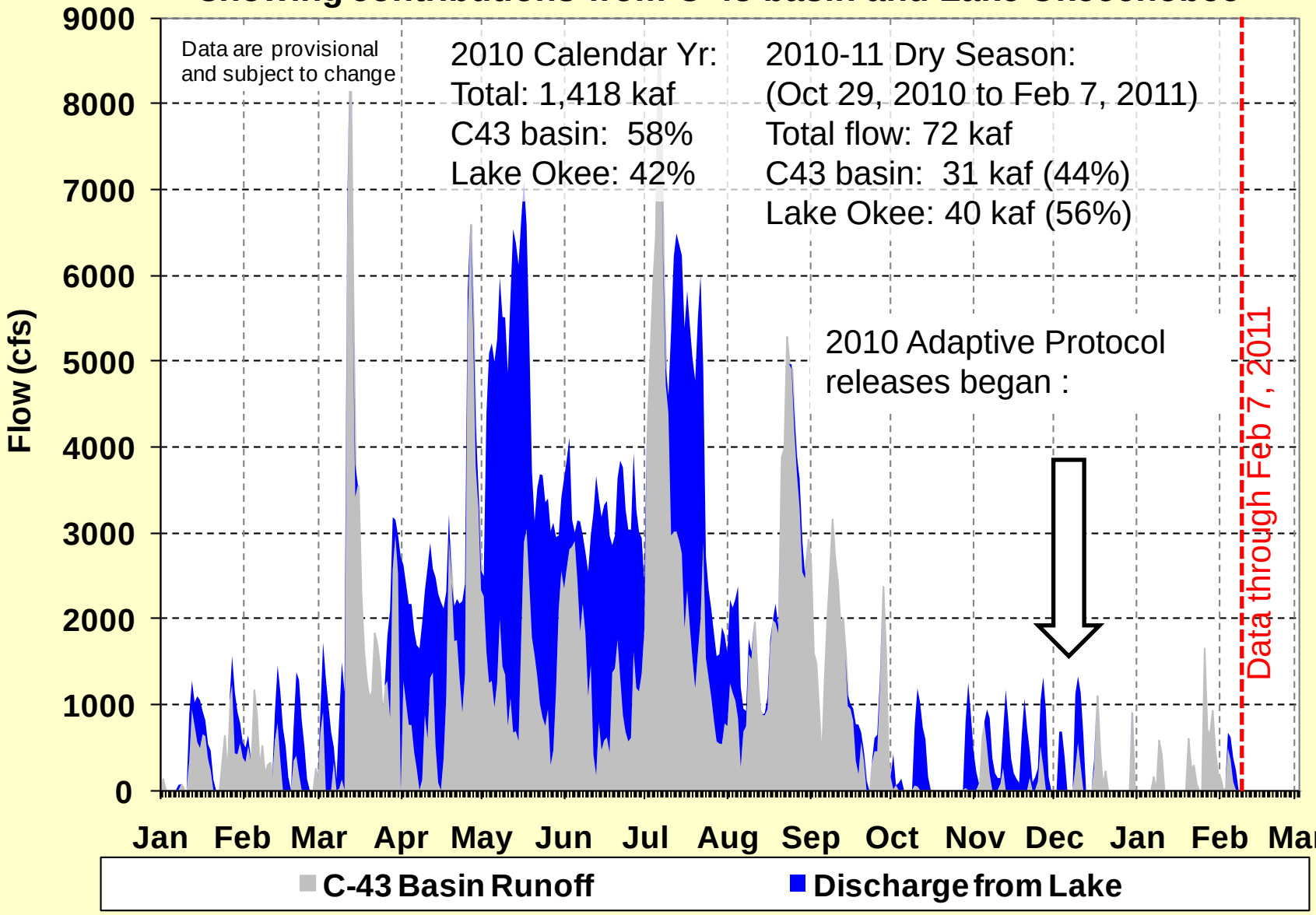
[5]Can release less than the "up to" limit if lower release is sufficient to reach or sustain desired estuary salinity; cfs = cubic feet per second.

[6]After reviewing conditions in Water Conservation Areas (WCAs), Stormwater Treatment Areas (STAs), ENP, St. Lucie Estuary and Lake Okeechobee.

[7]Should this condition be reached, the Governing Board will be briefed at their next regularly scheduled meeting as part of the State of the Water Resources agenda item.

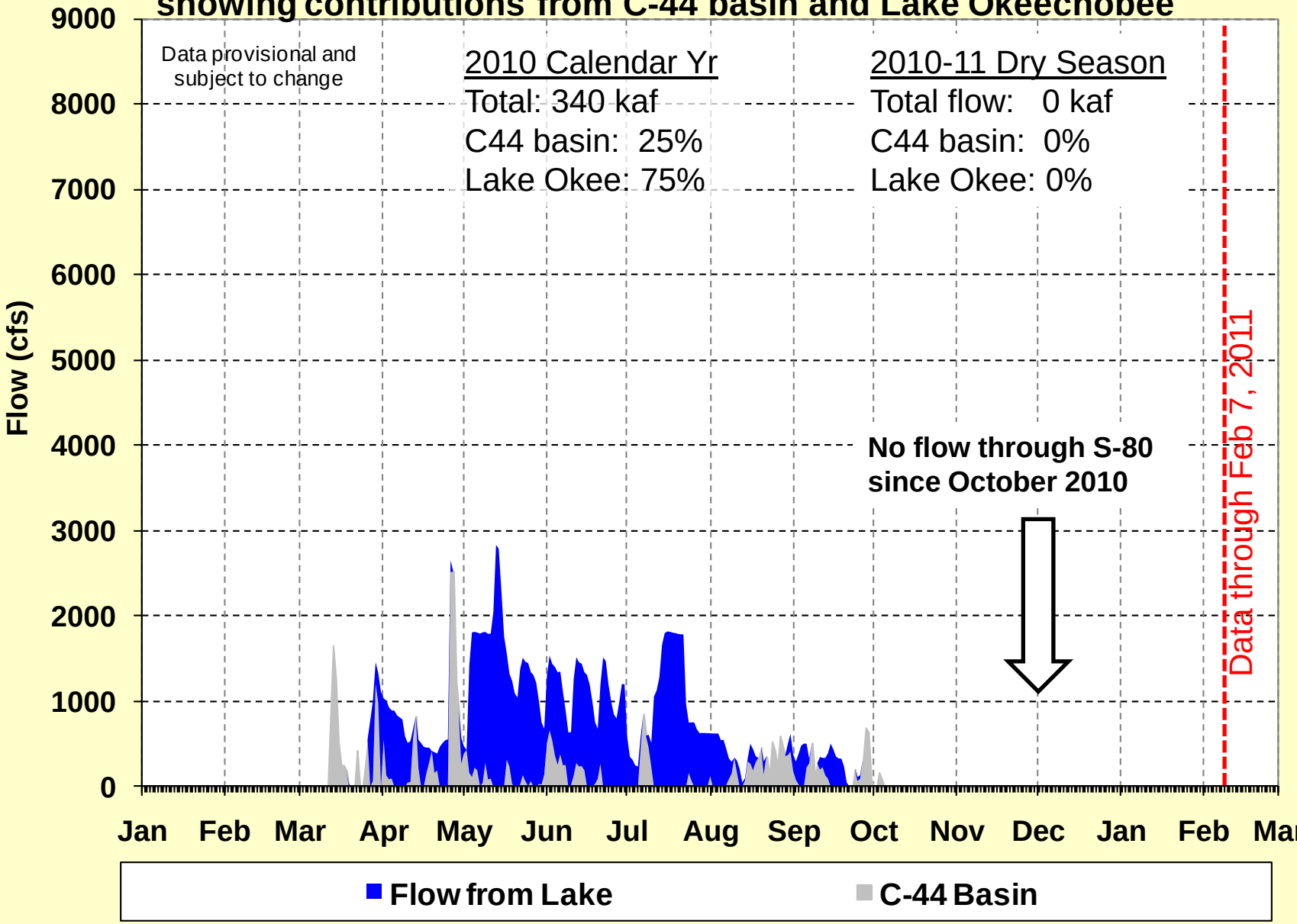
Total Flow From W.P. Franklin Lock and Dam (S-79)

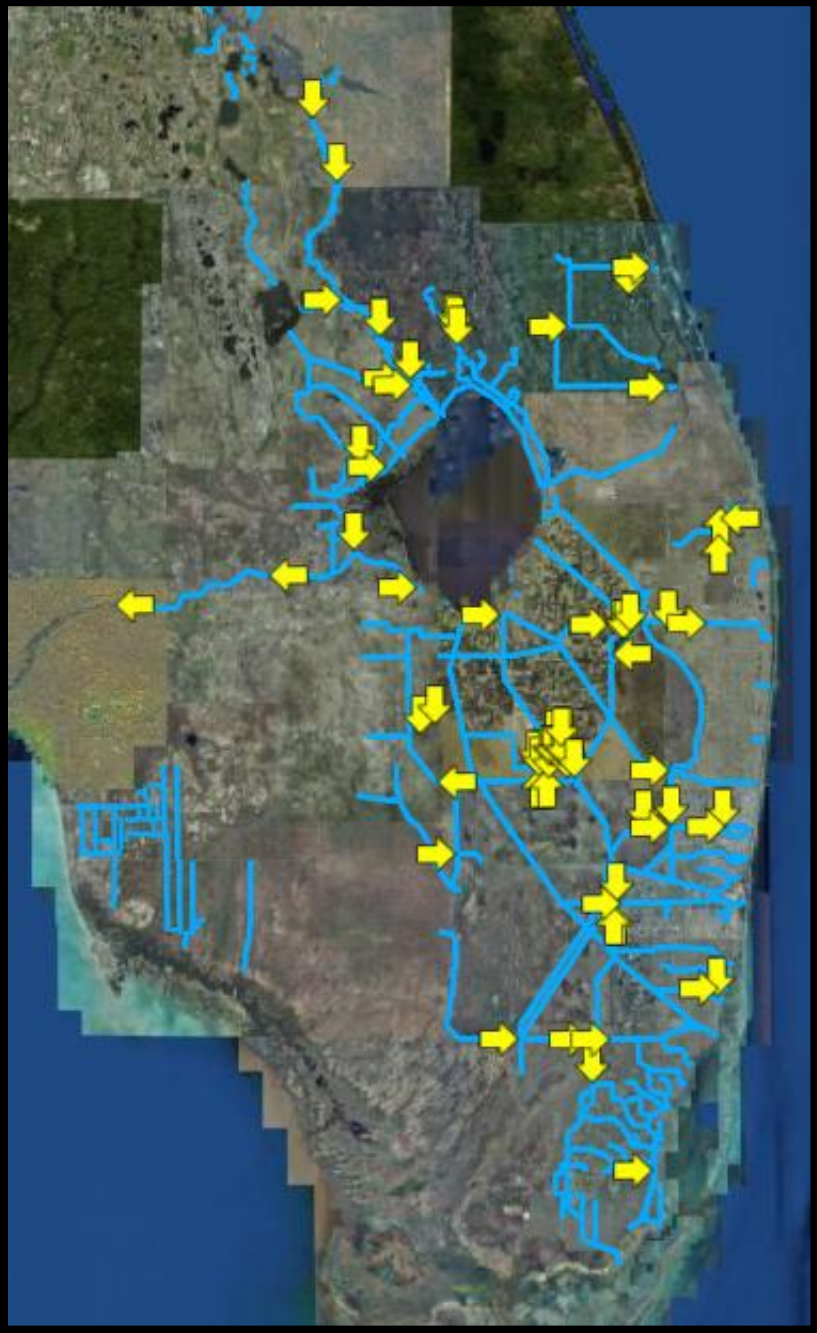
showing contributions from C-43 basin and Lake Okeechobee



Total Flow From St. Lucie Lock and Dam (S-80)

showing contributions from C-44 basin and Lake Okeechobee





Flow Conversions:

1 cfs (cubic feet per second)
for one day = 1.98 acre-feet (~2)

1 MGD (million gallons per day)
= 3.07 acre-feet per day (~3)

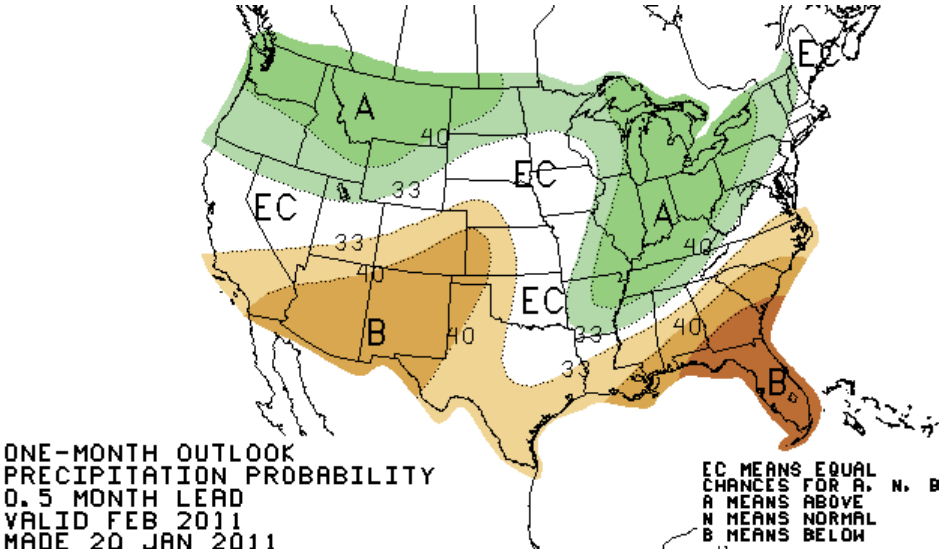
1 acre-foot per day = 0.504 cfs
Example of the Adaptive Protocol
Flows of 300 cfs

300 cfs is about 200 MGD

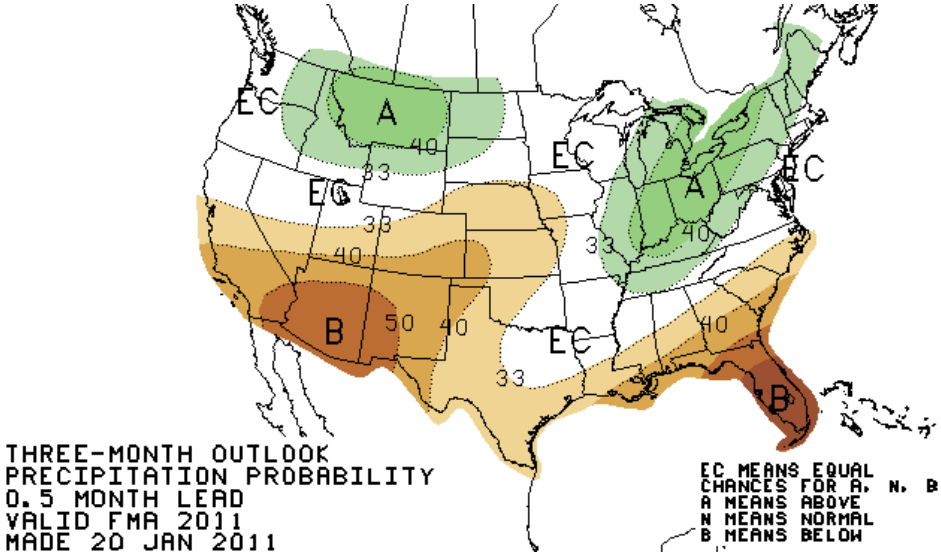
U. S. Seasonal Precipitation Outlook

National Climate Prediction Center (CPC)

Feb 2011



Mar-May 2011



La Nina conditions are expected to continue through the 2010-2011 dry season

The current precipitation outlook for central and southern Florida is:

- increased chance of below-normal (B) rainfall for February
- increased chance of below-normal (B) rainfall for Mar-May 2011

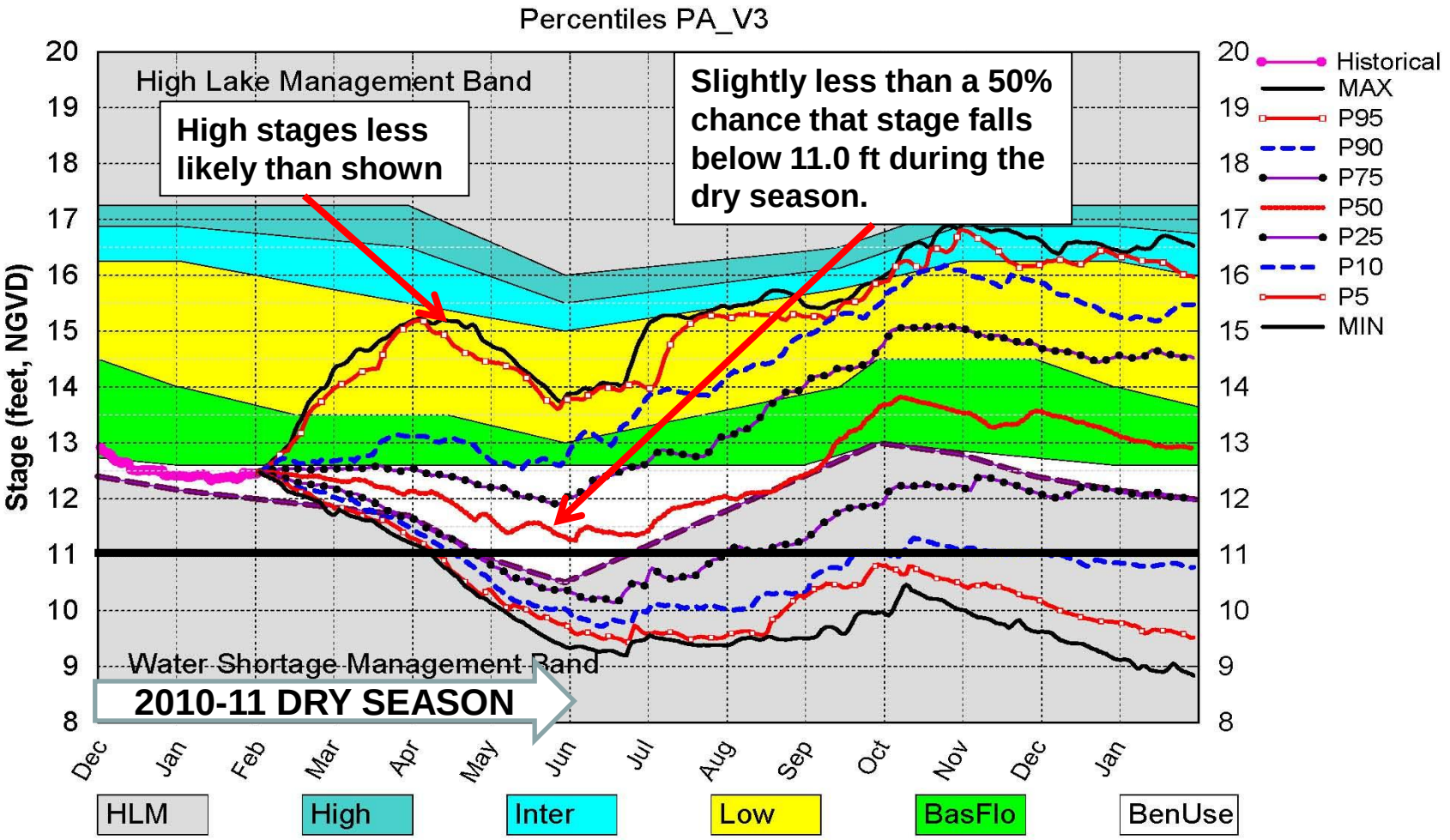
Lake Okeechobee Stage Forecast

- **Future Lake stage depends on future rainfall**
- **Projections provided monthly by SFWMD Hydrologic and Environmental Systems Modeling (HESM) Department**

  Don Ketprakong, Paul Trimble, Danielle Morancy, Luis Cadavid, Jayantha Obeysekera

- **Position Analysis**
  - **Each year starts with current hydrologic conditions**
  - **41 1-yr simulations of system response to historical rainfall conditions**
  - **Statistical summaries used to display projections**

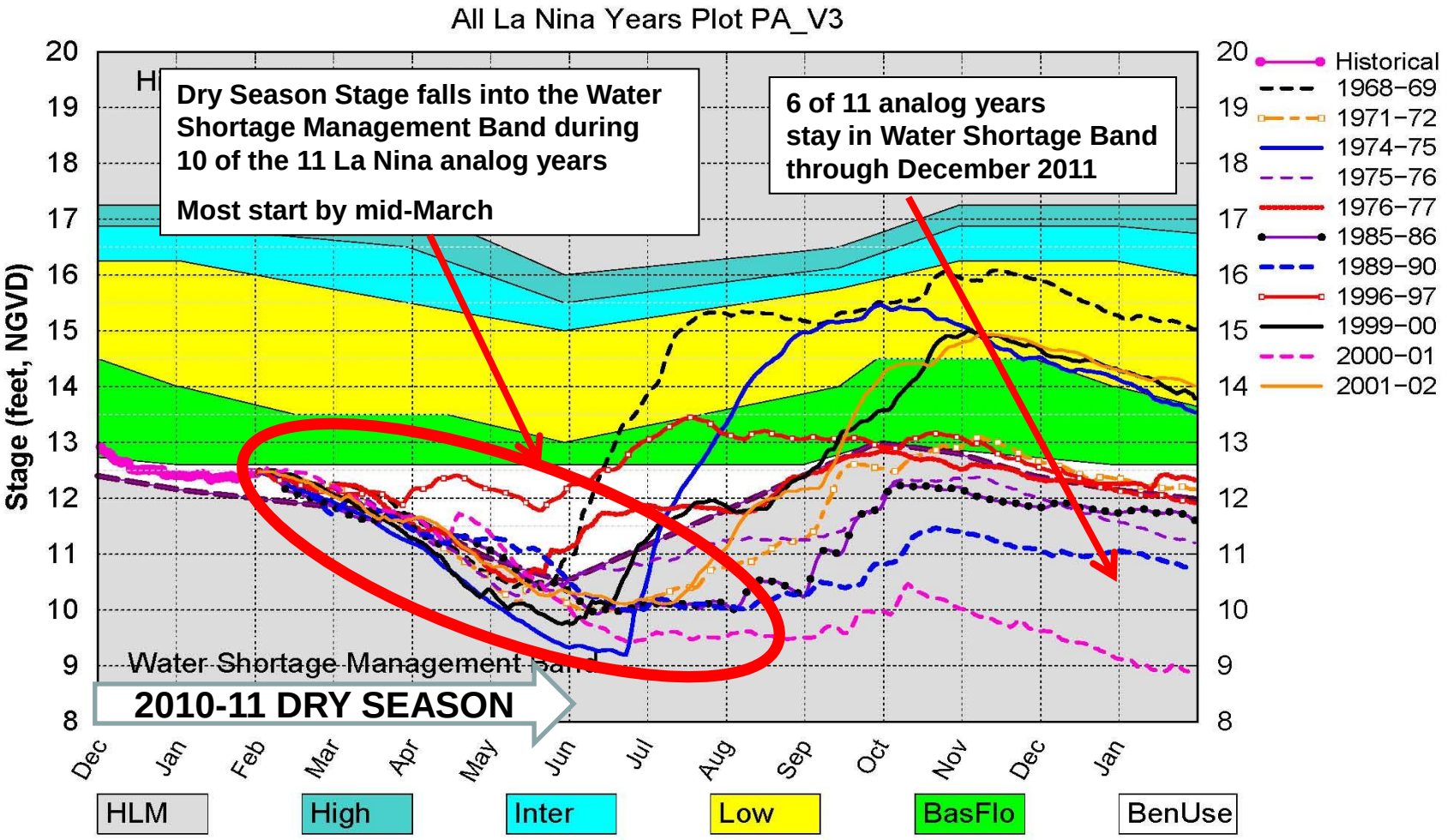
Lake Okeechobee SFWMM February 2011 Position Analysis



(See assumptions on the Position Analysis Results website)

Fri Feb 4 12:50:46 2011

Lake Okeechobee SFWMM February 2011 Position Analysis



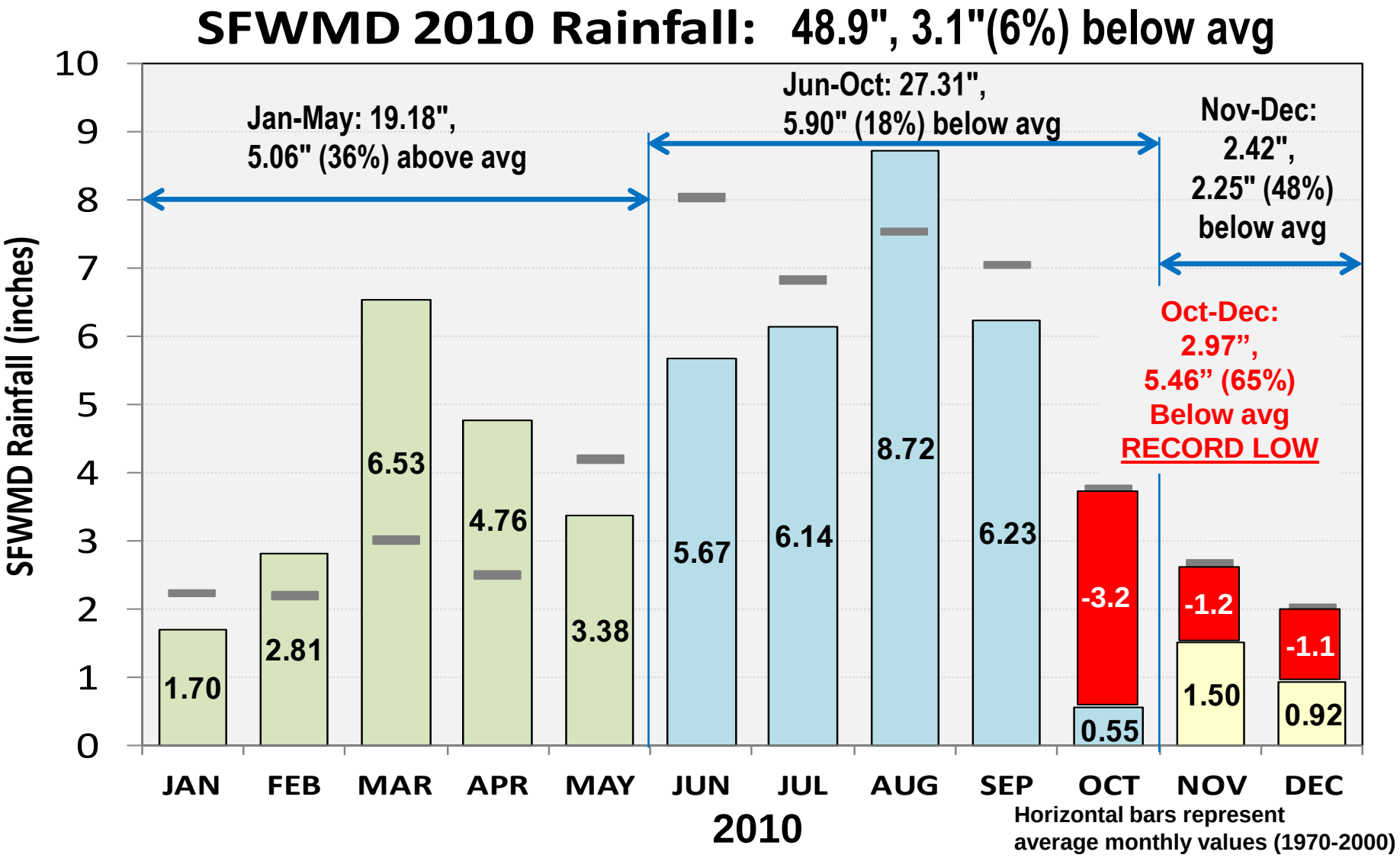
(See assumptions on the Position Analysis Results website)

Fri Feb 4 12:51:25 2011

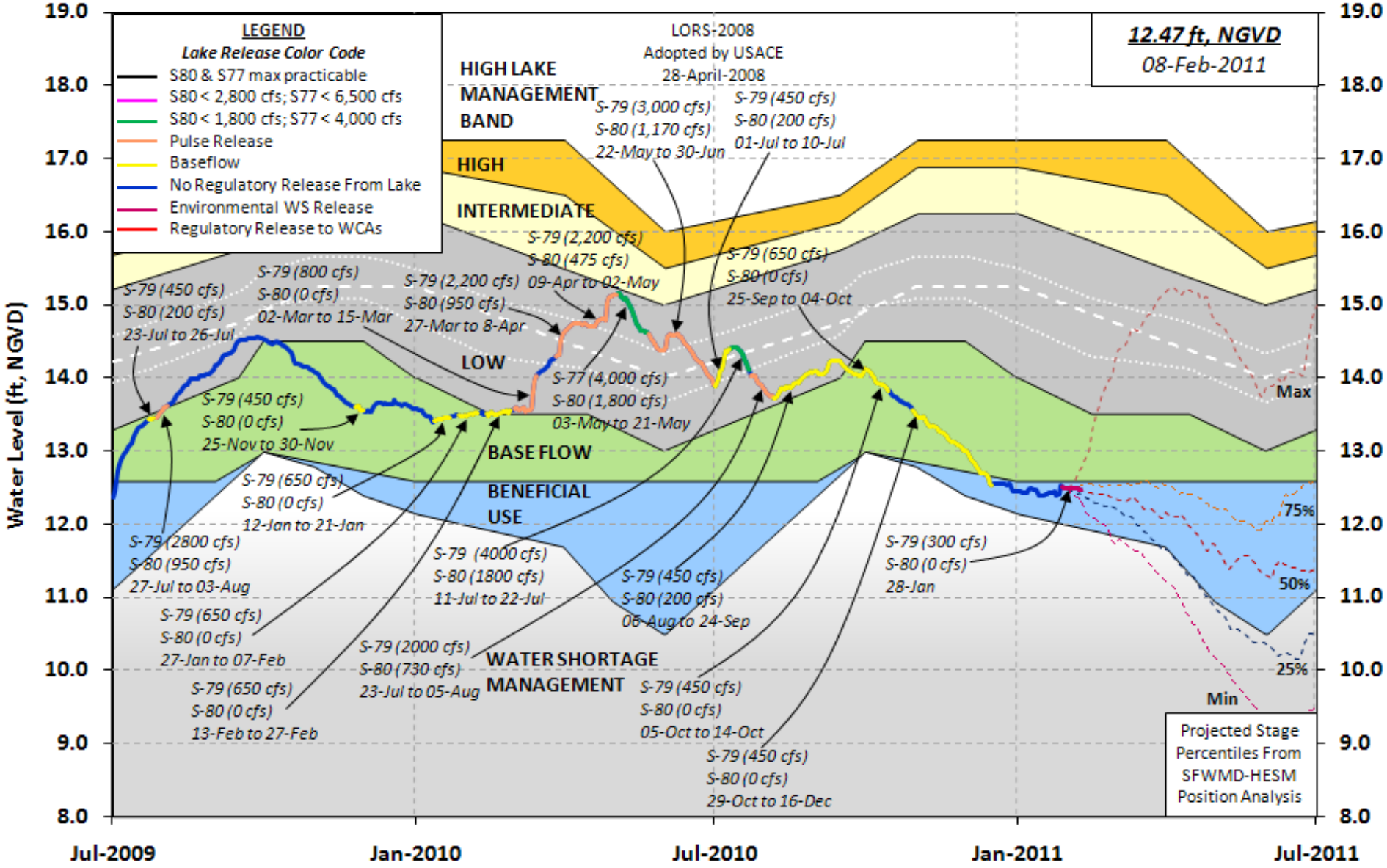
Questions??

Photo: Sunrise over Florida Bay – New Year's Day 2011 (M. Ansar)

2010 SFWMD Rainfall Distribution

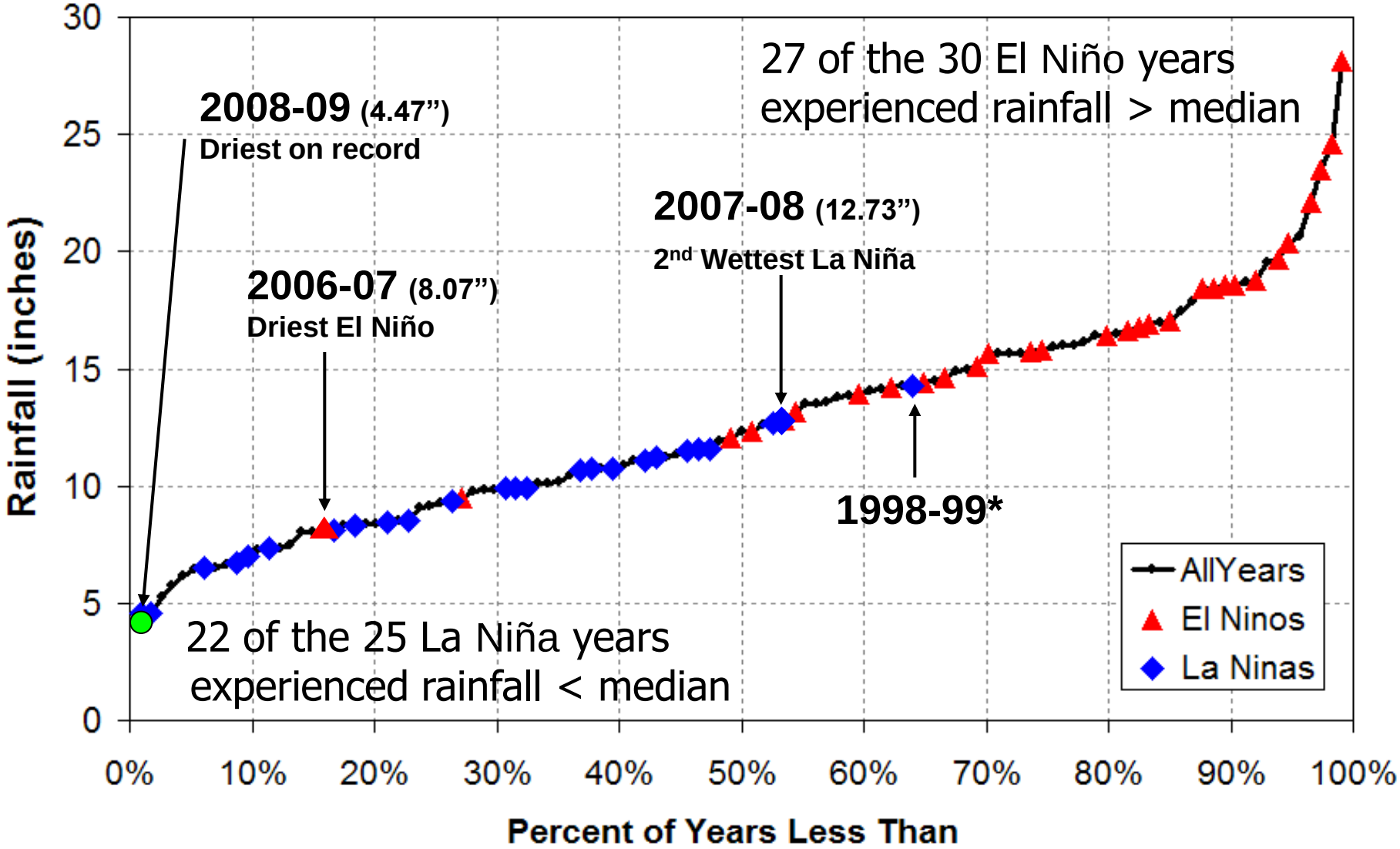


Lake Okeechobee Water Level History and Projected Stages



Historical SFWMD Dry Season Rainfall

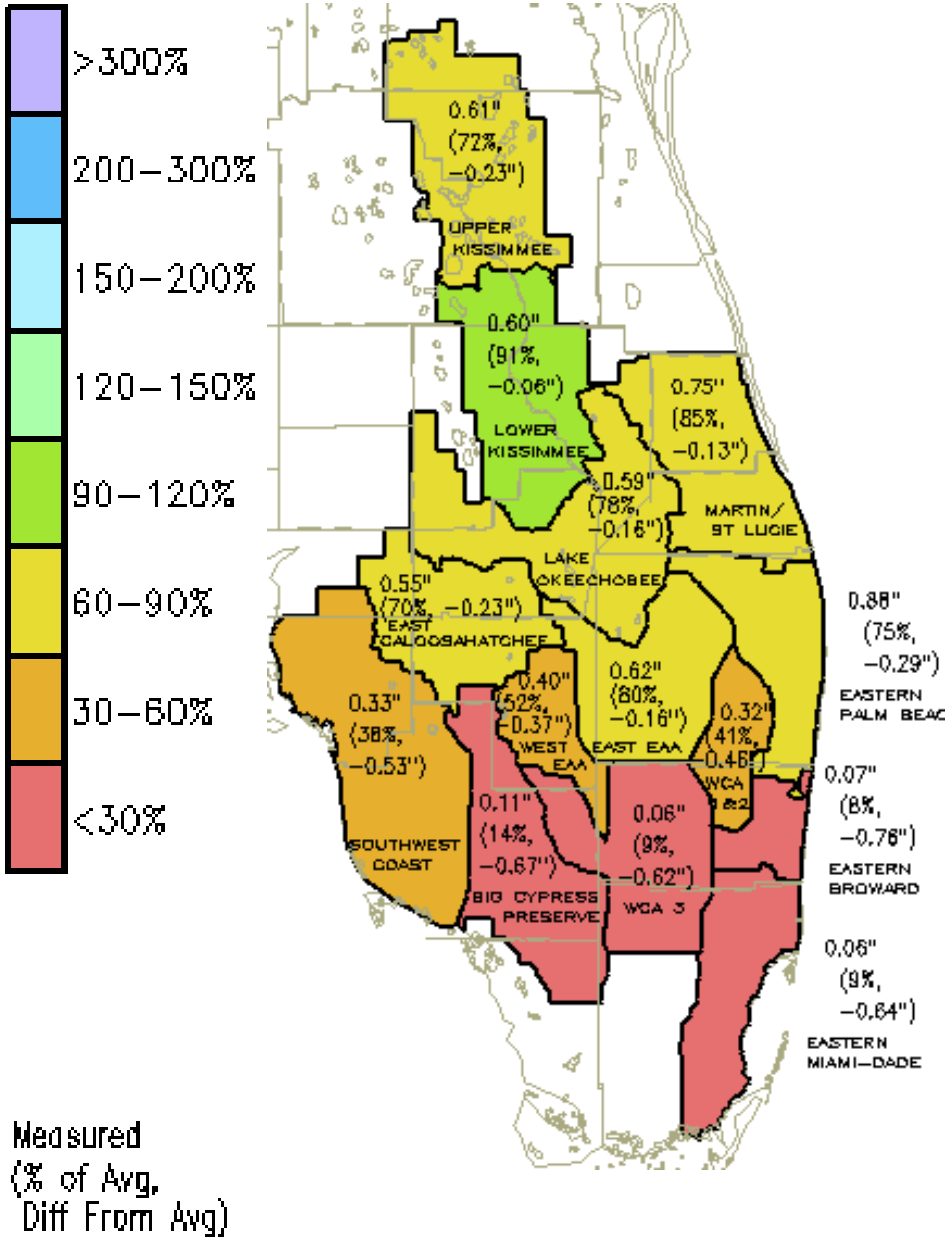
1896-2008 (November-April)



*1998 - 99 Heavily influenced by T.S. Mitch in Nov 1998 (5.6")

SFWMD 2011
January Rainfall
Jan 2 – Jan 12

DISTRICT-WIDE:
0.45” (57%, -0.34”)



- Through Jan 12, District wide January rainfall is about 57% normal

- Last week rainfall brought limited but much needed relief to Lower Kissimmee and Upper East Coast

- Eastern Broward, Miami Dade, Big Cypress Preserve and WCA3 are well below normal

2008 LORS

Part C: Establish Allowable Lake Okeechobee Releases to the Water Conservation Areas

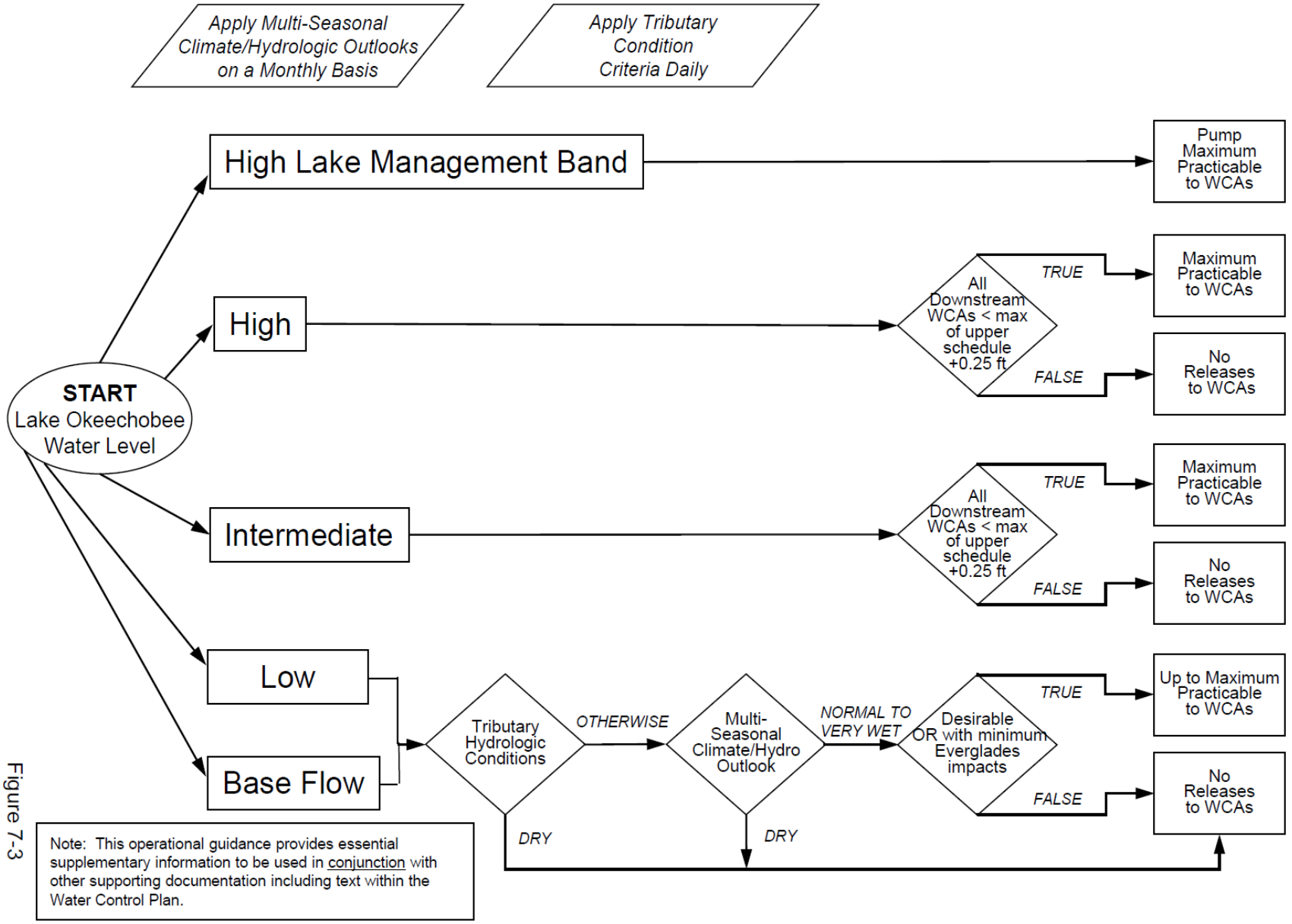


Figure 7-3

Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

2008 LORS

Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)

Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

When conducting Base Flow releases, flows can be distributed East and West up to 650 cfs as needed to minimize impacts or provide benefits through S-80 and S-79

Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis

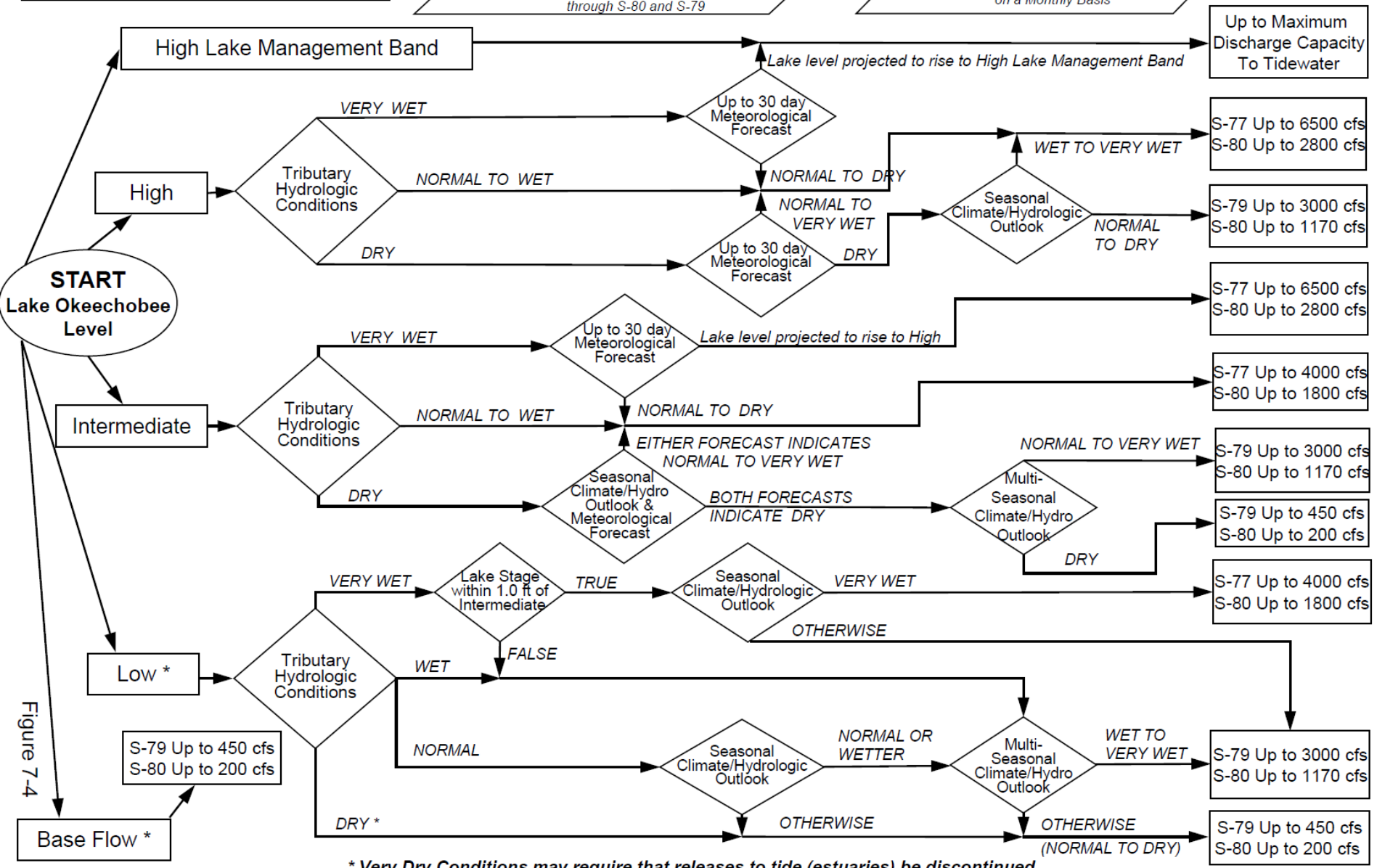
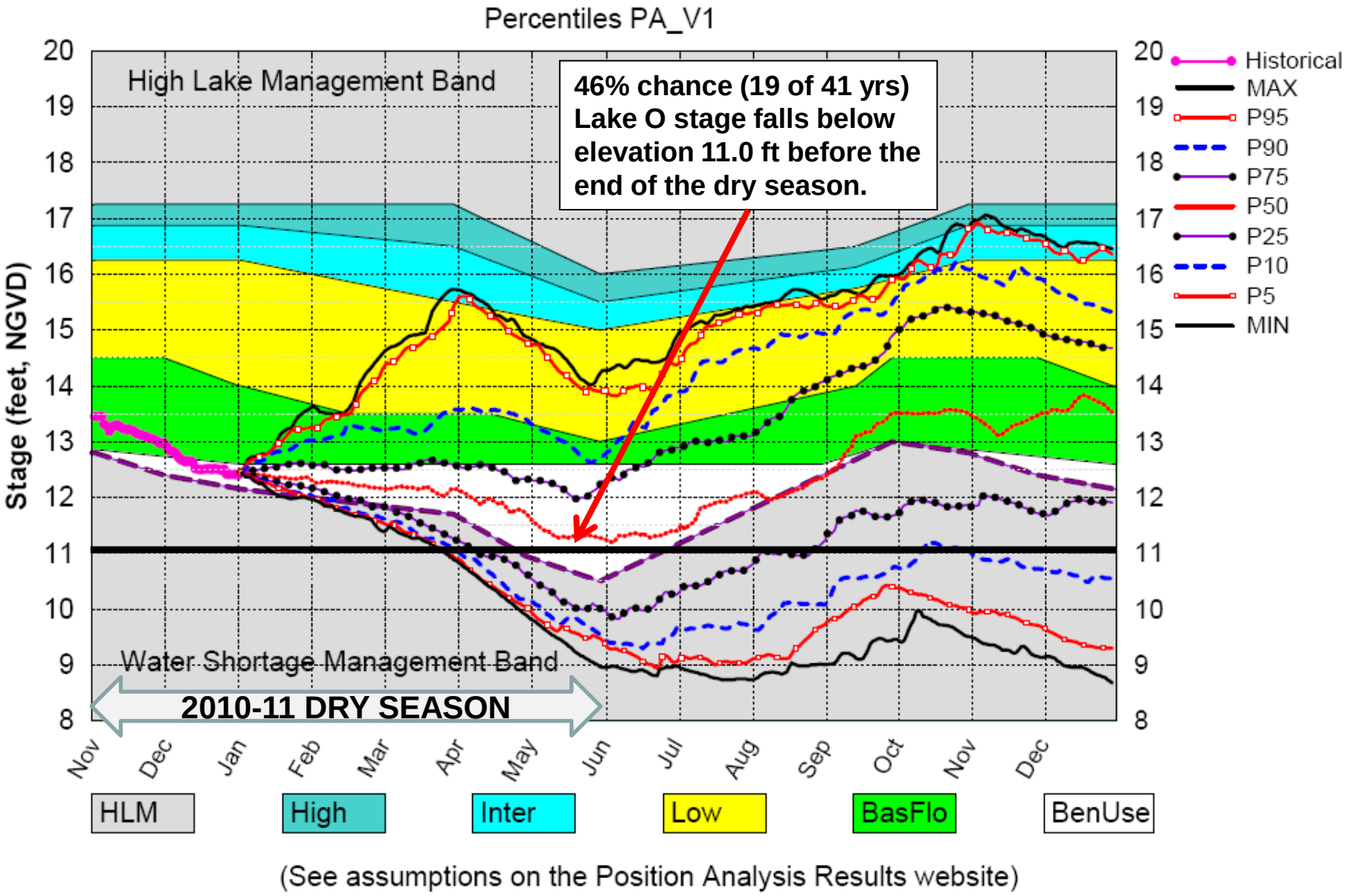


Figure 7-4

**** Very Dry Conditions may require that releases to tide (estuaries) be discontinued***

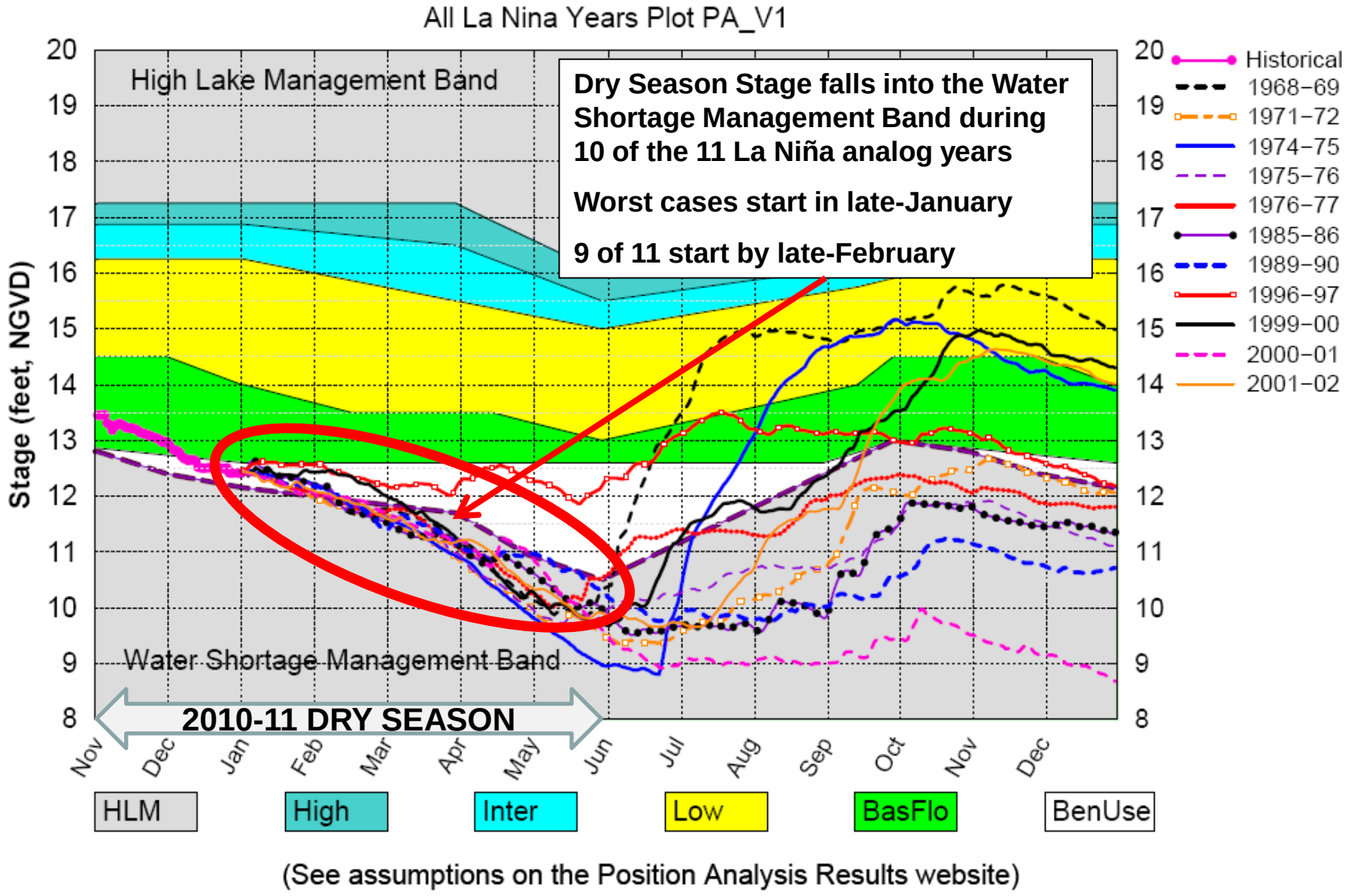
Lake Okeechobee SFWMM January 2011 Position Analysis



(See assumptions on the Position Analysis Results website)

Tue Jan 4 14:05:23 2011

Lake Okeechobee SFWMM January 2011 Position Analysis



(See assumptions on the Position Analysis Results website)

Tue Jan 4 14:05:50 2011

Water Conditions Summary

Lake Okeechobee - Lake Okeechobee is at 12.45 as of Feb 06 (Estimated)

Last 7-days Rainfall = 0.006”

As with October (12% of normal) and November (56% of normal) , December was also very dry with a rainfall total of 0.92” (49 % of normal rainfall) - Through Jan. 31, January rainfall is above normal, with a total of 2.38 inches (or 123% of normal, +0.45 inches).

Lake Kissimmee outflows are steady at about 250 cfs.

Limited water supply deliveries to EAA at S351 (WPB canal) and S354 (Miami canal)

Limited releases to the East Coast from WCA1 (S39), WCA2 (S38); Releases from WCA3 to NESRS (S333 at about 110 cfs) – and releases to SDCS from WCA3 at S334 (about 100 cfs)

S10s and S11s, S12A are closed per IOP- and S12B,C,D (total S12 flow 0 cfs) closed due to lack of rain. S333 open (110 cfs)